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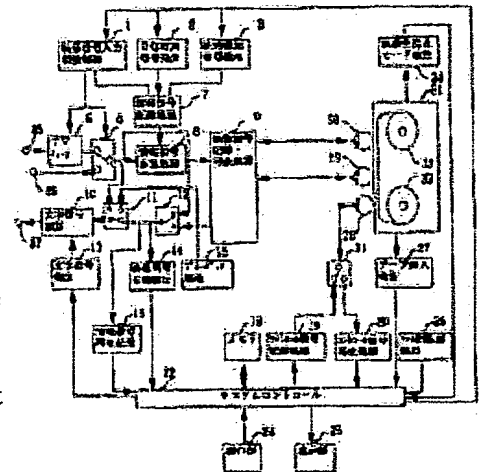
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(54) VIDEO RECORDING AND REPRODUCING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To easily retrieve a desired recording medium and program by retrieving an information signal stored in a storage means in response to a user's instruction so as to control a display signal output means thereby totally managing many recorded recording media.

SOLUTION: In the case that an identification number specific to the device, a table identification number and program video recording information are respectively coincident with each other in the collation of video recording information acquired through preliminary reproduction with video recording information stored in a memory 18, presence of an instruction of list display by a navigation function from an operation section 24 is confirmed. When the list display is instructed, the video recording information is read from the memory 18 and the video recording state is displayed as a list. In the cast that a plurality of recorded recording media are in existence, a desired recording medium can immediately be retrieved through a rearrangement function. For example, according to 'residual capacity' rearrangement, selection of a recording medium at the time of consecutive video recording is facilitated. Moreover, a number of recording media on which a desired title number of recorded and a video recording date or the like can be displayed as a list.



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CLAIMS

[Claim(s)]

[Claim 1]An image recording and reproducing device which can carry out record reproduction of a video signal

and the information signal to a recording medium, comprising:

A recording device which records a video signal and an information signal on a predetermined record section of a recording medium, respectively.

A reproduction means which reproduces a video signal and an information signal from a recording medium.

A memory measure which memorizes the above-mentioned information signal when above-recording or reproducing.

A status signal output means which displays an information signal memorized by this memory measure on a displaying means, and a display control means which searches an information signal memorized by the above-mentioned memory measure according to a user's directions, and controls the above-mentioned status signal output means.

[Claim 2]An image recording and reproducing device which is the image recording and reproducing device according to claim 1, and is characterized by said display control means performing control rearranged about two or more recording media according to a classification item which a user directed.

[Claim 3]An image recording and reproducing device, wherein it is the image recording and reproducing device according to claim 2 and said classification item is a recording date.

[Claim 4]An image recording and reproducing device, wherein it is the image recording and reproducing device according to claim 2 and said classification item is a residue of a recording medium.

[Claim 5]An image recording and reproducing device which is the image recording and reproducing device according to claim 1, and is characterized by said display control means performing control searched and displayed according to the contents of search which a user directed about two or more recording medium and two or more documentary programs.

[Claim 6]An image recording and reproducing device, wherein it is the image recording and reproducing device according to claim 5 and said contents of search are program title names.

[Claim 7]An image recording and reproducing device which is the image recording and reproducing device according to claim 1, and is characterized by said display control means carrying out a screen display of the symbol numerals to that effect when identified and contained [whether a signal which expresses copy prohibition with an information signal of a documentary program is included, and].

[Claim 8]An image recording and reproducing device which is the image recording and reproducing device according to claim 1, and is characterized by said recording device stopping recording operation when identified and contained [whether a signal which expresses copy prohibition with an information signal to record is included, and].

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention applies the alphabetic signal and control signal which were superimposed on the video signal, and relates to the image recording and reproducing device which makes a recording medium, search of a program, etc. easy.

[0002]

[Description of the Prior Art]In image recording and reproducing devices, such as VTR, the contents of record of a recording medium (magnetic tape) are displayed on a screen, and the device which has a function which carries out search playback of the desired program is already produced commercially. In that case, program retrieving accuracy is high and the art indicated by JP,H8-32922,A and JP,H11-039847,A, for example is known as composition in consideration of the user's user-friendliness. The former identifies the tape with which it was equipped, the list display of the recording date of each program recorded on it, the channel, etc.

is carried out on a screen, and the user can do search playback automatically, if a program is chosen. The latter is related with the art which carries out batch management of the picture recording program not only corresponding to an analog video signal but corresponding to a digital video signal.

[0003]

[Problem(s) to be Solved by the Invention]The above mentioned conventional technology has a function which displays the program information currently recorded on the tape to the tape with which it was equipped. Therefore, when there are few tapes, inconveniences are not suffered, but it is not easy for the recorded number of tapes to increase and to discover quickly the program which is a program number and which was recorded in the past when it increased in connection with this.

[0004]The purpose of this invention carries out batch management of such many recorded recording media (tape), and there is in providing the image recording and reproducing device with which a desired recording medium and program are searched easily. When other purposes of this invention dub the searched program to other recording media, there are in preventing dubbing accidentally the program to which the copy guard was given.

[0005]

[Means for Solving the Problem]The following composition was used for this invention in order to attain the aforementioned purpose.

[0006]In an image recording and reproducing device which can carry out record reproduction of a video signal and the information signal to a recording medium, A recording device which records a video signal and an information signal on a predetermined record section of a recording medium, respectively, A reproduction means which reproduces a video signal and an information signal from a recording medium, and a memory measure which memorizes the above-mentioned information signal when above-recording or reproducing, It had composition provided with a status signal output means which displays an information signal memorized by this memory measure on a displaying means, and a display control means which searches an information signal memorized by the above-mentioned memory measure according to a user's directions, and controls the above-mentioned status signal output means.

[0007]Said display control means was made to perform control rearranged about two or more recording media according to a classification item which a user directed.

[0008]Said display control means was made to perform control searched and displayed according to the contents of search which a user directed about two or more recording medium and two or more documentary programs.

[0009]Furthermore, said display control means was made to carry out a screen display of the symbol numerals to that effect, when it was identified and contained [whether a signal showing copy prohibition is included, and] in an information signal of a documentary program.

[0010]

[Embodiment of the Invention]Hereafter, the embodiment of this invention is described with reference to an accompanying drawing.

[0011]Drawing 1 is a block diagram showing the entire configuration of the cassette tape type image recording and reproducing device (VTR) which is one embodiment of this invention. In drawing 1, a video signal input switching control circuit and 2 1 A date and a time signal generation circuit, 3 an actual address signal generating circuit and 5 TV tuner, and 6, 11 and 12 A video-signal switching circuit, 7 an information signal recording processing circuit and 8 an information signal multi-processing circuit and 9 Video-signal record and a reproducing processing circuit, 10 an alphabetic signal adder circuit and 13 an alphabetic signal generation circuit and 14 A video-signal existence detector circuit, 15 a blaubok generation circuit and 16 an information signal reproducing processing circuit and 18 A memory, A control signal recording processing circuit and 20 19 A control signal reproducing processing circuit, A control signal switch circuit and 22 21 A system control circuit, A final controlling element and 25 for 24 an indicator and 26 a reel number-of-rotations detector circuit and 27 A tape insertion detector circuit, 28 -- a control head, and 29 and 30 -- an image head and 31 -- as for an erroneous-erasure-prevention mode detector circuit and 35, a take up reel and 33 are [a video signal input terminal and 37] video signal output terminals a TV broadcast signal input terminal and 36 a feed reel and 34 magnetic tape and 32.

[0012]The power button which constitutes the final controlling element 24 from a remote control unit, for example, and directs ON and OFF of a power supply, The tape Navi button which directs the navigation function which displays the recording situation of a cassette tape and supports recording/playback selection, It has the earth switch and determination button (all are the graphic display abbreviations) which direct the stop of the list display button which directs the list display of the contents of recording, the program selection button which carries out selection instructing of the target picture recording program, the recording reproduction button which directs recording, the reproduction button which directs playback, recording, or playback. Each of these switch buttons are provided so that it may provide for exclusive use independently or

may use also [switch buttons / other] if needed.

[0013]Drawing 2 is a flow chart which shows the basic control operation (control management which the system control circuit 22 mainly performs) in this image recording and reproducing device.

[0014]If the power button of the final controlling element 24 is operated by the user and the injection of a power supply is directed, the system control circuit 22 will perform powering on of this magnetic-video-recording playback equipment (Step S1). And the existence of the cassette tape (tape cassette 31) set is checked first (Step S2), and then the insertion surveillance of the cassette tape 31 is performed (Step S3). The tape insertion detector circuit 27 detects insertion of the cassette tape 31. If the tape insertion detector circuit 27 detects insertion of the cassette tape 31, the system control circuit 22 will perform preliminary playback (step S4), and will perform device number discernment (Step S5), tape identification number detection (Step S6), and program information detection (Step S7).

[0015]Here, preliminary reproduction and recording information acquisition processing step S4 are explained. The signal which started preliminary playback and was played by the magnetic heads 29 and 30 is regenerated by video-signal record and the reproducing processing circuit 9, by the information signal reproducing processing circuit 16, extracts a recording information signal and outputs it to the system control circuit 22. Recording information here is actual address information on the identification number peculiar to a device and the identification number peculiar to a cassette tape which recorded to the cassette tape 31 currently played, and the cassette tape (magnetic tape) currently played. The system control circuit 22 acquires and holds the recording information signal inputted from the information signal reproducing processing circuit 16. The system control circuit 22 controls the video-signal switch circuit 11, and it is made to output the video signal from the TV tuner 5 to the video signal output terminals 37 via the alphabetic signal adder circuit 10 at this time. Therefore, the video signal reproduced in preliminary regeneration is not outputted to the video signal output terminals 37. Since this preliminary playback is aimed at reading and acquiring the recording information currently recorded on the cassette tape 31, it is not necessary to display the video signal played, and he is trying to avoid the unnecessary display of a reproduced video signal. After the system control circuit 22 carries out predetermined time execution of this preliminary regeneration, it suspends a run of the cassette tape 31 automatically, and ends this preliminary playback.

[0016]The system control circuit 22 checks the existence of the recording information acquired and held in preliminary reproduction (Step S7). When holding recording information, the recording information which the actual address is set as the actual address signal generating circuit 3, and has been memorized in the memory 18 is searched (step S9). It is checked whether the recording information memorized in the identification number peculiar to a device played from the cassette tape 31 and the identification number peculiar to a tape cassette, and the memory 18 has a match (Step S10). In the recording for which this image recording and reproducing device used the navigation function, It memorizes and holds in the memory 18 by making into recording information the identification number peculiar to a cassette tape, the picture recording program number, the recording day and the day of the week and recording channel which were recorded whenever it performed recording, a recording start/finish time, recording mode, etc., and the identification number peculiar to a device is held.

[0017]The identification number peculiar to a device and the identification number peculiar to a cassette tape which recorded about the cassette tape 31 inserted in the device, recording information not being extracted in preliminary reproduction (in Step S7, it is "N"), and, when not in agreement with it which was memorized by the memory 18 (it is "N" in Step S10), When the video-signal existence detector circuit 14 has not detected playback of a video signal (it is "N" in Step S10), the cassette tape 31 is rewound to the tape position at the time of cassette insertion, preliminary playback is resumed, and acquisition of recording information is tried again (Step 11).

[0018]And check the existence of recording information acquisition again (Step S12), and the recording information memorized in the memory 18 is searched (Step S13). When both recording information is compared (Step S14) and there is no match, the cassette tape 31 is rewound to the position at the time of this cassette insertion (Step S16). The smallest number that is not yet used as an identification number (tape number) peculiar to a cassette tape is broken, and it hits (Step S17).

[0019]Next, the display of the recording state of the cassette tape 31 by a navigation function is explained. In collation of the recording information acquired by preliminary reproduction, and the recording information memorized in the memory 18, When an identification number and a tape identification number peculiar to a device, and program recording information are in agreement, respectively (it is "Y" in Step S10 and S14), When the existence of directions of the list display in the navigation function from the final controlling element 24 is checked (Step S18) and the list display is directed, recording information is read from the memory 18 and the list display of the recording state is carried out (Step S19). This list display from the blaubok generation circuit 15, the TV tuner 5, or the video signal input terminal 36 to a video signal. By superimposing the character and picture numerals which were generated in the alphabetic signal generation

circuit 13, it is made to display on a television monitor screen, or the indicator 25 performs.

[0020]Next, search control is explained. If the target picture recording program is chosen by the final controlling element 24 and search is directed (Step S20), the system control circuit 22 will perform the search control management step S21. In this control management step S21, first, a recording start / end unit data is read from the memory 18, and a target actual address is set up. And the target actual address and the cassette tape 31 which were read from the memory 18 are turned per a recording start/end, and it moves. Tape transit time is computed according to a difference with the present actual address of the cassette tape 31. The computed transit time is compared with the transit time computed by calculation of the CTL signal during cassette tape movement. If both are in agreement, the present actual address of the cassette tape 31 will be read, the actual address and target actual address are compared, if in agreement, movement of the cassette tape 31 will be suspended and search will be ended.

[0021]In addition to the above basic control function, by this invention, it has the following new functions. Next, the function to describe is realizable, mainly using the system control 22, the memory 18, the final controlling element 24, and the indicator 25.

[0022]Drawing 3 shows the example of a screen display of the tape data rearrangement function by this invention. Drawing 3 (a) is what carried out the list display of the tape memorized by the equipment memory 18 to Screen 100, and the seven contents of a tape registered are displayed in order of the item 101 of "the tape No" in this case. On the other hand, if cursor selection of the item 102 of the "last recording day" of the screen upper row is made when a user wishes the display of last recording Japanese order, rearrangement will be possible for the new order of a recording day like drawing 3 (b). If the item 104 of the "residue" of the screen upper row is chosen when a user wishes the display of the order of a residue, rearrangement will be possible for order with much tape residual quantity time like drawing 3 (c). There are many tapes, and when it cannot display on 1 page, a page change can be performed with the function button 106 of the screen lower berth. With such a rearrangement function, a desired tape can be searched immediately. For example, tape selection will become easy, if "residue" rearrangement is used when recording succeedingly.

[0023]Next, drawing 4 shows the example of a screen display of the program title search service by this invention. The program name which a user sets up a title or is included in a broadcasting signal is set to a program title as it is to the recorded program here. A program title search service displays the program list applicable to the target title. The item 111 of a "title input" is chosen on the program retrieving screen 110 of drawing 4 (a). Then, it changes to the title input retrieval picture of drawing 4 (b), and a title is inputted. This operation is the same as that of the time of title registration, and a character or a sign containing a Chinese character is inputted. It is indicating that drawing 4 (c) is under search. Drawing 4 (d) is an example of search results, and the list display of the tape No in which it was recorded, the recording day, etc. is carried out to the program 115 of the target title. According to this function, search and reproduction of the serial drama etc. which were distributed, for example and were recorded become easy.

[0024]As a program retrieving function, it has a function of genre retrieval and recording day search in addition to this. The genre retrieval 112 classifies the recorded program into genres, such as a "movie", "music", and a "sport", and searches it according to this genre. The recording day search 113,114 searches a recording day based on the "moon", a "day", and a "day of the week." Thus, a retrieval item can be suitably chosen by a use.

[0025]Drawing 5 is a flow chart which shows the copy guard function of the image recording and reproducing device by this invention. The program of the prohibition on a copy (dubbing) is included in the program broadcast now, and it is the composition for performing this certainly. Re acquisition of the copy information on which the broadcasting signal was overlapped is carried out (S37), the existence of change is distinguished to copy information (S40), and recording is terminated when it is judged as copy prohibition. With this function, a user can prevent copying accidentally. When what was especially recorded as a single program has included the unexpected copy prohibition program by a recording start or change of finish time, this can be identified automatically and a copy can be forbidden.

[0026]Furthermore, drawing 6 is the example which displayed the copy guard function on the program list screen 120. That is, it displays by the emblem (icon) 121, and warning is emitted by the message 122 and a user prevents dubbing the program by which the copy guard was carried out accidentally.

[0027]Although the above explanation targeted the magnetic recorder and reproducing device (VTR) as an image recording and reproducing device, this invention is not limited to this but can be applied also to the recording and reproducing device which uses a magnetic disk, an optical disc, semiconductor memory, etc. as a recording medium.

[0028]

[Effect of the Invention]As stated above, when it has two or more recorded recording media according to this invention, a desired recording medium can be immediately searched with a rearrangement function. For example, according to "residue" rearrangement, selection of the recording medium at the time of recording

succeedingly becomes easy. The list display of No of the recording medium with which the program of the desired title was recorded, the recording day, etc. is carried out. Search and reproduction of a serial drama etc. become easy with this function. Since a copy prohibition program is furthermore automatically discriminable according to this invention, a user can be prevented from dubbing the program by which the copy guard was carried out accidentally.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The entire configuration figure showing one working example of the image recording and reproducing device by this invention.

[Drawing 2]The flow chart figure showing the basic control operation in the device of drawing 1.

[Drawing 3]The example of a screen display of the tape data rearrangement function by this invention.

[Drawing 4]The example of a screen display of the program title search service by this invention.

[Drawing 5]The flow chart explaining the copy guard function by this invention.

[Drawing 6]The example which carried out a screen display of the copy guard function.

[Description of Notations]

- 5 --- TV tuner
- 7 --- Information signal recording processing circuit
- 8 --- Information signal multi-processing circuit
- 9 --- Video-signal record and reproducing processing circuit
- 18 --- Memory
- 22 --- System control
- 24 --- Final controlling element
- 25 --- Indicator
- 31 --- Magnetic tape
- 100 --- Tape list display screen
- 110 --- Program retrieving screen
- 120 --- Copy guard display screen

[Translation done.]

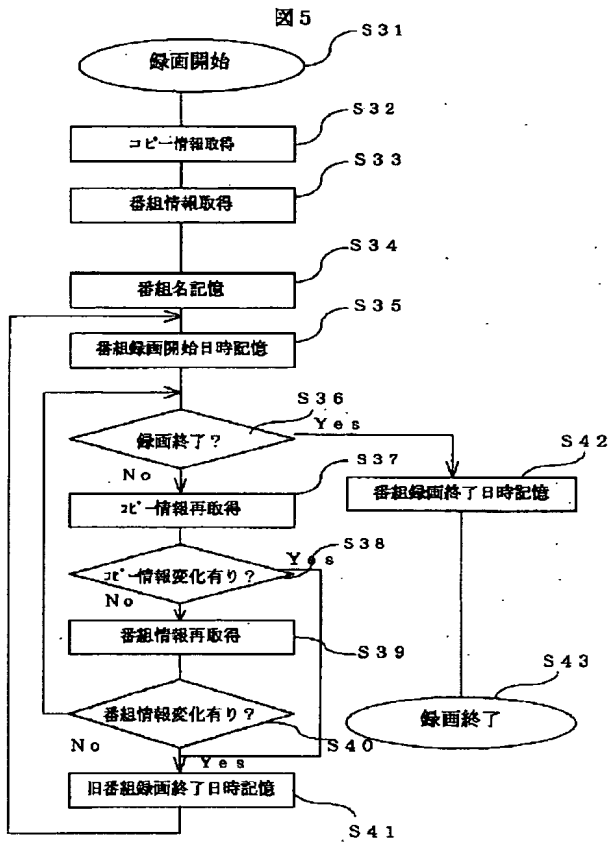
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DRAWINGS

[Drawing 5]



[Drawing 6]

図 6

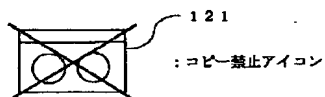
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母線先：D-VHS テープNo：1 番組数：4

選択メニュー	番組	録画日	番組名	長さ
全選択	1	5/20(日)	ワールドスポーツ	50
全解除	6/2(金)	BS11Ch	Am9:00~	30
選択完了	6/10(木)	NRA	バスケット...	120
	3	4/19(日)	4Ch Pm10:00~	45
	2	4/29(木)	6Ch Pm11:05~	50

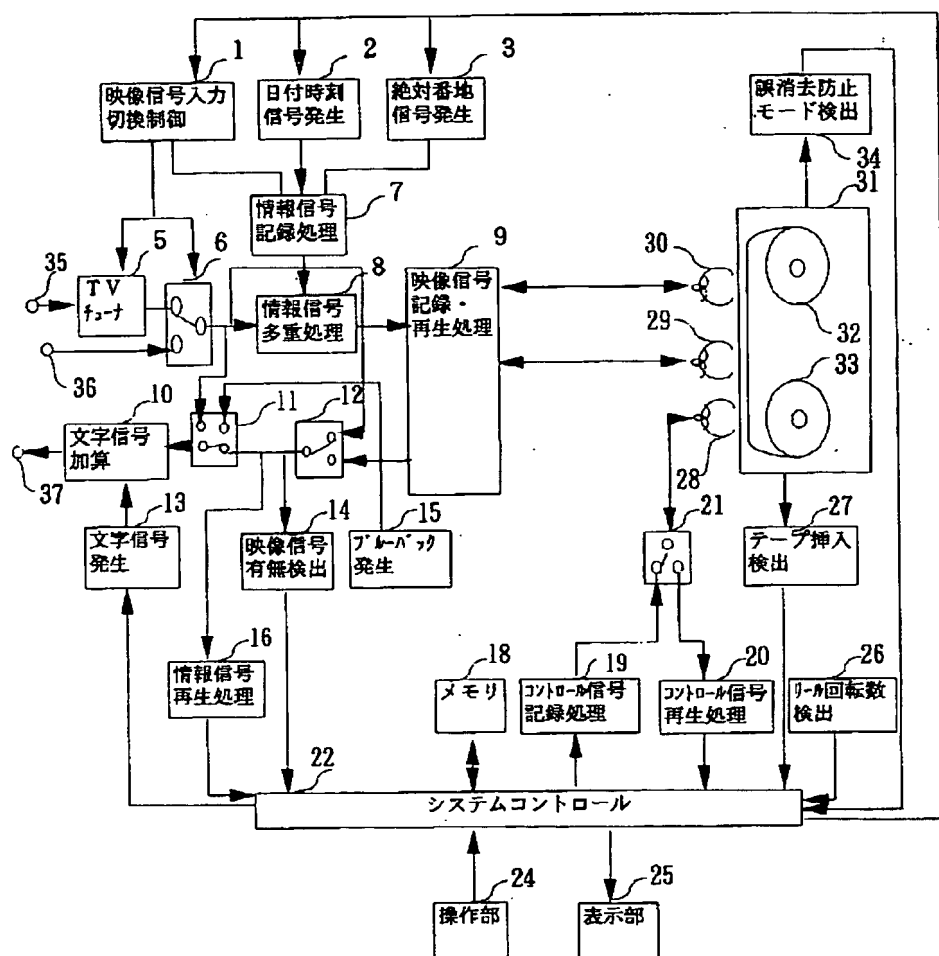
この番組はコピーガード処理されているので
ダビングできません

[F1]で選んで[決定] [F2]：終了



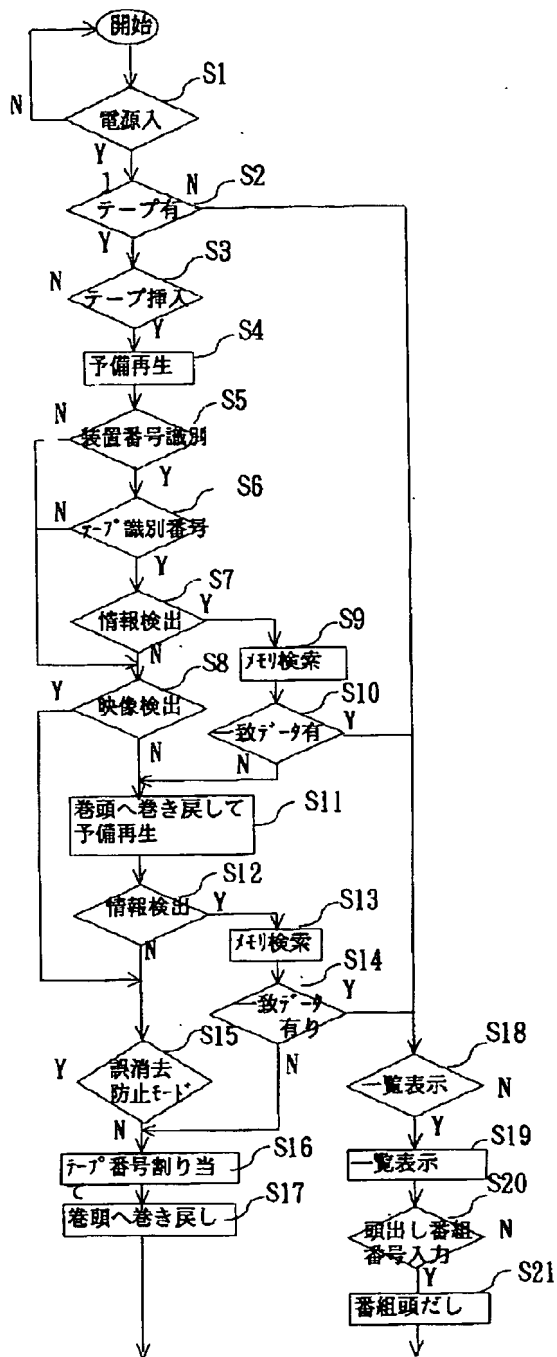
[Drawing 1]

図 1



[Drawing 2]

図 2



[Drawing 3]

図 3

(a)

	101	102	103	104	105
④ テープ一覧					登録率: 1%
	テープNo	最終録画日	番組数	残量	先頭番組情報
001	1	1999/4/1(木)	2	80	6 --:--
002	2	1999/4/2(金)	1	30	L1 --:--
003	3	1999/4/3(土)	3	10	4 --:--
004	4	1999/4/4(日)	4	60	1 --:--
005	5	1999/4/5(月)	1	20	3 --:--
006	6	1999/4/6(火)	6	110	12 --:--
007	7	1999/4/7(水)	1	150	8 --:--
008	登録テープの最後です				
7本のテープが登録されています。					
[決定]: 番組一覧 (D) 並替 [数字]: No指定 [機能]: ページ					

100

106

(b)

	102
④ テープ一覧	登録率: 1%
	テープNo 最終録画日 番組数 残量 先頭番組情報
001	7 1999/4/7(水) 1 150 8 --:--
002	6 1999/4/6(火) 6 110 12 --:--
003	5 1999/4/5(月) 1 20 3 --:--
004	4 1999/4/4(日) 4 60 1 --:--
005	3 1999/4/3(土) 3 10 4 --:--
006	2 1999/4/2(金) 1 30 L1 --:--
007	1 1999/4/1(木) 2 80 6 --:--
008	登録テープの最後です
7本のテープが登録されています。	
[決定]: 番組一覧 (D) 並替 [数字]: No指定 [機能]: ページ	

(c)

	104
④ テープ一覧	登録率: 1%
	テープNo 最終録画日 番組数 残量 先頭番組情報
001	7 1999/4/7(水) 1 150 8 --:--
002	6 1999/4/6(火) 6 110 12 --:--
003	1 1999/4/1(木) 2 80 6 --:--
004	4 1999/4/4(日) 4 60 1 --:--
005	2 1999/4/2(金) 1 30 L1 --:--
006	5 1999/4/5(月) 1 20 3 --:--
007	3 1999/4/3(土) 3 10 4 --:--
008	登録テープの最後です
7本のテープが登録されています。	
[決定]: 番組一覧 (D) 並替 [数字]: No指定 [機能]: ページ	

[Drawing 4]

図 4

(a)

(b)

(c)

(d)

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